Enhancement of power system dynamic performance through an on-line self-tuning adaptive SVC controller

Rahim, A.H.M.A. (2006) *Enhancement of power system dynamic performance through an on-line self-tuning adaptive SVC controller.* Electric Power Systems Research , 76 (9-10). pp. 801-807.

Abstract

Static VAr compensators (SVC) are used for voltage control of long distance bulk power transmission lines. By using a supplemental control loop an SVC can also be used to improve the dynamic and transient stability of a power system. Use of a self-tuning adaptive control algorithm as a supplementary controller for the SVC is presented in this article. The control derived is based on a pole-shifting technique employing a predicted plant model. Simulation studies on a simple power system model showed rapid convergence of the estimated plant parameters with an extremely good damping profile. The controller has been tested for ranges of operating conditions and for various disturbances. The effectiveness of the adaptive damping controller was also evaluated through an 'optimized' PI controller.